HIROI, et al., 09/986,299   501.40830X00 / 210000485US1
13 April 2006 Amendment   Page 2
Responsive to 13 December 2005 Office Action

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the

application:

Listing of Claims:

   Claims 1-27 (Cancelled)

   Claim 28 (Currently Amended)   A pattern inspection method comprising: ~~the~~

~~steps of:~~

   conditioning for setting up a mask region in a specimen to be inspected; and

   inspecting for detecting defects on the specimen and outputting information of

defects which are detected in areas other than said mask region on said specimen,

   wherein said inspecting operation is applied to plural specimens one after

another, and the conditioning operation includes:

   ~~attaining~~obtaining a digital image of ~~an object substrate~~a test

inspection area of the specimen for testing through microscopic observation

thereof;

   detecting ~~defects~~defect candidates of a pattern formed ~~on~~in said ~~object~~

~~substrate~~test inspection area of said specimen for testing by comparing said

digital image with a reference image stored in a memory; ~~while masking a pre-~~

~~registered region or a pattern matching with a pre-registered pattern in which~~

~~the pre-registered region or the pre-registered pattern is inputted and~~

~~displayed on a display screen; and~~

   displaying on ~~the~~a display screen, ~~an actual image of a defect among~~

~~the defects detected together with display on the display screen of~~ positional

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distribution data of the defects detected ~~on~~in said ~~object substrate~~test

inspection area of said specimen for testing in a map format;

defining said mask region in said test inspection area on said display

screen in which said detected defects are displayed in a map format; and

saving a data of said defined mask region in a recipe to be used in

subsequent iterations of the inspecting operation.

Claim 29 (Currently Amended) A pattern inspection method as claimed in

claim 28,

wherein the ~~pre-registered region or pre-registered pattern~~ mask region is a

region ~~or pattern~~ which has been inputted using the digital image attained through

microscopic observation of the specimen. ~~object substrate.~~

Claim 30 (Cancelled)

Claim 31 (Currently Amended) A pattern inspection method comprising: ~~the~~

~~steps of:~~

conditioning for setting up a mask region in a specimen to be inspected; and

inspecting for detecting defects on a specimen and outputting information of

defects which are detected in areas other than said mask region on said specimen,

wherein said inspecting operation is applied to plural specimens one after

another, and the conditioning operation includes:

~~obtaining a digital image of an object substrate through microscopic~~

~~observation thereof;~~

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~~detecting defects of a pattern formed on said object substrate by~~

~~comparing said digital image with a reference image stored in a memory; and~~

inspecting a test inspection area of a specimen for testing under a trial

inspection condition and detecting defect candidates;

classifying said detected defect candidates by using information of

image and feature quantity of said defect candidates;

displaying ~~data on the defects detected~~said defect candidates detected

in said test inspection area under said trial inspection condition on a display

screen ~~and displaying an inputted pre~~ registered feature on the display

~~screen~~in a map format together with information obtained at the classifying

operation;

~~wherein, at the step of displaying, a positional distribution of the defects~~

~~on said object substrate is displayed on the display screen in a map format~~

~~together with display on the screen of an enlarged actual image of a defect~~

~~among the defects detected, the positional distribution being displayed by~~

~~excluding defects having a feature that matches with the pre-registered~~

~~feature or distinguishing from defects which do not have a feature that~~

~~matches with the pre-registered feature~~defining said mask region in said test

inspection area on said display screen in which said detected defects are

displayed in a map format; and

saving a data of said defined mask region in a recipe to be used in

subsequent iterations of the inspecting operation.

Claim 32 (Currently Amended) A pattern inspection method as claimed in

claim 31,

wherein the ~~pre-registered feature is a feature~~ mask region is a region which

has been inputted using the digital image obtained through microscopic observation

of the specimen. ~~object substrate.~~

Claim 33 (Cancelled)

Claim 34 (Currently Amended) A pattern inspection method comprising; ~~the~~

~~steps of:~~

conditioning for setting up a mask region in a specimen; and

inspecting for detecting defects on a specimen and outputting information of

defects which are detected in areas other than said mask region on said specimen,

wherein said inspecting operation is applied to plural specimens one after

another, and the conditioning operation includes;

designating one of die area among plural die areas formed on a

specimen for the conditioning operation;

obtaining a digital image of ~~an object substrate~~ said designated die area

through microscopic observation thereof;

detecting ~~defects~~ defect candidates of a pattern formed ~~on~~ in said ~~object~~

~~substrate~~ designated die area by comparing said digital image with a reference

image stored in a memory;

~~inputting and displaying on a display screen a pre-registered region, a~~

~~pre-registered configuration or pre-registered feature quantity of the object~~

~~substrate; and~~

displaying on ~~the~~ a display screen data of the ~~defects~~ defect candidates

detected in the detecting operation including ~~a position on~~ positional

information in said ~~object substrate~~designated die area in a map format;

~~together with display on the display screen of an enlarged actual image of a~~

~~defect among the detected defects;~~

~~wherein, at the step of displaying, data regarding defects located in a~~

~~pre-registered region, or data having a pattern that matches with a pre-~~

~~registered configuration or pre-registered feature quantity is displayed so as to~~

~~be distinguishable from data regarding an other detected defect~~defining on

said display screen a mask region in said map; and

saving a data of said corrected mask region in a recipe to be used in

subsequent iterations of the inspecting operation.

Claim 35-36 (Cancelled)

Claim 37 (Previously Presented) A pattern inspection method as claimed in

claim 34,

wherein feature quantity data of each defect contains at least one kind of data

including defect position data, projection length data, area data, and shape data.

Claim 38 (Currently Amended) A pattern inspection method comprising; ~~the~~

~~steps of:~~

conditioning for setting up a mask region in a specimen to be inspected; and

inspecting for detecting defects on a specimen and outputting information of

defects which are detected in areas other than said mask region on said specimen,

wherein said inspecting operation is applied to plural specimens one after

another, and the conditioning operation includes:

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<u>designating one of die area among plural die areas formed on</u>

<u>specimen for the conditioning operation;</u>

<u>inspecting said designated die area under a trial inspection condition</u>

<u>and detecting defect candidates;</u>

<u>classifying said detected defect candidates by using information of</u>

<u>image and feature quantity of said defect candidates;</u>

<u>displaying said defect candidates detected in said test inspection area</u>

<u>under said trial inspection condition on a display screen in a map format</u>

<u>together with information obtained at the classifying operation;</u>

<u>designating a defect class to be masked among said classified defect</u>

<u>candidates;</u>

<u>displaying defect candidates which belong to said designated defect</u>

<u>class on said screen;</u>

<u>defining said mask region in said designated die area on said display</u>

<u>screen in which said defect candidates belonging to said designated defect</u>

<u>class are displayed in a map format; and</u>

<u>saving a data of said mask region defined at the defining operation in a</u>

<u>recipe to be used in subsequent iterations of the inspecting operation.</u>

~~obtaining a digital image of an object substrate through microscopic~~

~~observation thereof;~~

~~detecting candidate defects by processing the obtained digital image;~~

~~extracting defects from the detected candidate defects by excluding candidate~~

~~defects located in a predefined region on the object substrate or having a pattern~~

~~that matches with a pre-registered pattern which is inputted and displayed on a~~

~~display screen;~~

~~displaying an actual image of a defect among the extracted defects on the~~
~~display screen together with display on the display screen of positional distribution~~
~~data on the object substrate in a map format and feature quantity data thereof;~~
~~classifying the defect which is displayed on the display screen; and~~
~~outputting class data of the classified defect together with feature quantity~~
~~data thereof.~~

Claim 39 (Previously Presented) A pattern inspection method as claimed in claim 38,

wherein the class data of each of the classified defects is displayed on the display screen together with an image thereof.

Claim 40 (Previously Presented) A pattern inspection method as claimed in claim 38,

wherein a digital image of each of the detected candidate defects is stored, and a judgment for extracting defects from the detected candidate defects is carried out by using the stored digital image of each of the detected candidate defects.

Claim 41 (Currently Amended)   A pattern inspection method as claimed in claim 38,

wherein the feature quantity ~~data~~ of each of the extracted defects is displayed on a CAD terminal.

Claim 42 (Currently Amended)   A pattern inspection method as claimed in claim 38,

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wherein the feature quantity data of each of the extracted defects is displayed

or printed together with CAD data thereof.

Claim 43 (New) A pattern inspection method as claimed in claim 28, wherein

the defining is effected by a human user manually designating the mask region in the

test inspection area on the display screen.

Claim 44 (New) A pattern inspection method as claimed in claim 31, wherein

the defining is effected by a human user manually designating the mask region in the

test inspection area on the display screen.

Claim 45 (New) A pattern inspection method as claimed in claim 34, wherein

the defining is effected by a human user manually designating the mask region in the

test inspection area on the display screen.

Claim 46 (New) A pattern inspection method as claimed in claim 38, wherein

the defining is effected by a human user manually designating the mask region in the

test inspection area on the display screen.